FINAL

CLEAN AIR ACT SECTION 112(r) INSPECTION REPORT
Middleport Cold Storage
Middleport, NY

GENERAL INFORMATION

Stationary Source	Middleport Cold Storage
Date of Inspection	November 18, 2009
USEPA Inspector	Francesco Maimone – USEPA, REGION II (Edison, NJ)
Contract Auditor	Neil Mulvey, Sullivan Group (Subcontractor)
Description of Activities	• Opening meeting with facility representative. • Program audit. • Closing meeting with facility representatives. Program audit consisted of the following activities: 1. Document review. 2. Field verification. 3. Personnel interviews

STATIONARY SOURCE INFORMATION

EPA Facility ID #	1000 0020 5805
Date of Latest Submission (used for RMP inspection)	Receipt Date: February 17, 2009 (First Time) Anniversary Date: February 13, 2014
Facility Location	10 Kelly Ave. Middleport, NY 14105 Niagara County Tel. (716) 735-7724
Number of Employees	*RMP*Submit* states 65 employees (per RMP registration). Facility management reported a total of 80 employees on-site. Facility management reported that Middleport Cold Storage only employs six. Number of employees listed in RMP registration includes Middleport Cold Storage and Niagara Foods, Inc. employees.

Description of Surrounding Area	The facility is located on a 4-acre plot in a rural / residential area in Middleport, NY. The facility is surrounded by wooded area or residential properties. The nearest residential property is approximately 50-feet from the facility property line.
Participants	Participants included representatives from: Francesco Maimone, USEPA – Region II, Edison, NJ Neil Mulvey, USEPA Contractor Gregory Bass, Director of Operations – Niagara Foods, Inc. Robert Neuman, Plant Manager – Middleport Cold Storage* * Lead representative for Middleport Cold Storage.

REGISTRATION INFORMATION

Process ID #	78351
Program Level (as reported in RMP)	Program 3
Process Chemicals	Anhydrous Ammonia @ 15,200 -lbs.
NAICS Code	49312 (Refrigerated Warehousing and Storage)

GENERAL COMMENTS

Middleport Cold Storage operates on a four-acre site that it owns. Niagara Foods, Inc. also operates on-site as a lessee. Niagara Foods is a fruit processor processing apples, cherries, blueberries (wild and cultivated), and cranberries. Final product includes frozen and powdered fruit used in subsequent food manufacturing such as pies, tarts, etc. Niagara Foods processes approximately 10,000-lbs. of fruit per hour. Middleport Cold Storage provides refrigeration services utilized by Niagara Foods in its fruit processing as well as refrigerated cold storage, shipping, and receiving. Middleport Cold Storage also leases cold storage facilities at other locations.

Middleport Cold Storage operates a closed loop refrigeration process using anhydrous ammonia as a refrigerant. Middleport Cold Storage operates freeze tunnels and blast freezers. The facility also supplies ammonia for coolers and chillers used in the processing area and a complete freezing/cooling distribution warehouse for storage. Refrigeration equipment includes:

- Compressors (11) (7 high stage compressors and 4 booster compressors)
- Condensers (11); management reported that est. 4 to 9 condensers will be taken out-of-service by the Spring of 2010
- High Pressure Receivers (2)
- Evaporators (16)
- Low Pressure Vessels (5)
- Individually quick frozen (IQF) freezers (2)
- Ammonia liquid supply piping
- Ammonia vapor return piping

The refrigeration system has been in-place since 1990 (est.). Management stated that it was originally thought that the anhydrous ammonia inventory (estimated at < 9,500-lbs, ~1999) in the refrigeration system was less than the 10,000-lbs. RMP threshold quantity, and therefore did not require registration. Prior to adding a new IQF tunnel in January 2009, the facility believed that the total ammonia amount was conservatively below their latest anhydrous ammonia inventory (~1999) because it had replaced ammonia pipes with ammonia coils in several refrigeration rooms.

In January 2009 a new IQF tunnel was started-up. This new freezer required a charge of an additional 1,500 – 2,500-lbs. of anhydrous ammonia to the system. In January 2009 the facility re-estimated the total ammonia charge and determined that the charge was approximately 15,000-lbs. Based on this estimate, the facility submitted its 'first time' RMP registration on February 17, 2009.

Facility management explained that a major fire occurred at the facility on June 11, 2007. The fire damaged major portions of the roof on refrigerated storage areas. They explained that there was no impact on the actual refrigeration system. Management reported that refrigeration equipment in the affected areas was pumped down to the engine room resulting in no loss of ammonia.

The Director of Operations has overall responsibility for all site operations. The Plant Manager is responsible for the refrigeration system and shipping and receiving. A 'Storage Engineer' has day-to-day responsibility for operation of the ammonia refrigeration system.

Middleport Cold Storage operates the refrigeration system 24-hours a day, 7-days a week, 365-days a year. Fruit processing is seasonal. The refrigeration system is staffed only during the day shift, M-F with part time coverage on Saturday. Facility management reported that Niagara Foods, Inc. employees are on-site 24-hours a day, 7-days a week, Monday through Friday, and one shift on Saturdays. The facility is 'checked' on Sundays and holidays. Therefore, there are significant period of time (est. 5:00 PM until 6:00 AM daily, weekends, holidays) when there is no trained refrigeration person on-site and some periods of time (weekends and holidays) when there is no one on-site.

RMP DOCUMENTATION

The facility's RMP program was completely developed by an outside consultant (Ammonia Process Safety Management, Springfield, UT). The program was originally only available via Internet connection to the consultant's website. Facility management reported that just recently all of the RMP documents were printed, organized into binders (eight total), and shipped to the site. Facility management therefore was just becoming familiar with the content of the RMP binders.

Registration

The facility's most recent Risk Management Plan, submitted on February 13, 2009, contained adequate registration information.

Management System [*40 CFR 68.15*]

The facility's management system does not accurately reflect the roles of individuals listed in the management system. The management system contained delegated job titles with responsibility in implementing the Risk Management Program. These job titles, however, were in a template format that did not reflect actual positions and responsibilities at the facility.

Hazard Assessment [*40 CFR 68.22 – 68.39*]

The facility has performed appropriate Worst Case (WC) and Alternate Case (AC) scenarios. The facility used the RMP Comp program in order to determine the distance-to-endpoint estimates under the WC and AC scenarios. The RMP Comp program inherently contains the appropriate release temperatures, atmospheric stability class, and wind speeds appropriate for each scenario. The facility has adequately determined the surface roughness for each scenario to be "urban".

The facility used Landview 2000 software, which contains the most recent 2000 Census data, to determine potentially impacted population sizes within each distance-to-endpoint.

Hazard Assessment documentation indicating whether environmental receptors exist within the distance-to-endpoint were not available for review.

Process Safety Information (PSI) [*40 CFR 68.65*]

PSI includes a block flow diagram of the process (PID-A01; 11/27/08). The piping and instrument diagrams (P&IDs) of the process are very basic showing only major pieces of equipment. The P&IDs do not show all of the equipment utilized in the process such as valves and instrumentation.

PSI included completed International Institute of Ammonia Refrigeration (IIAR) inspection forms (IIAR-109 forms) for individual components in the refrigeration system, including compressors, condensers, pressure vessels, evaporators, and pumps. This evaluation was completed by the Storage Engineer in November 2009 and includes the following documentation:

- ID of unit
- Specification data
- Nameplate info
- Operating limits
- Checklist regarding safeties and instrumentation
- Checklist inspection for major components

PSI included ventilation calculations for the engine room.

There was no PSI available for review regarding electrical area classification.

Process Hazard Analysis (PHA) [*40 CFR 68.67*]

The initial PHA was conducted during two team session meetings on January 15 – 16, 2009. The PHA was led by an outside consultant with team participation including:

- An outside refrigeration contractor
- Facility Storage Engineer
- Facility Plant Manager
- Facility Director of Operations
- Facility President
- Consulting Specialist

The PHA utilized the What-If/Checklist method using industry checklists prepared by the IIAR and International Association of Refrigerated Warehouses (IARW). The PHA evaluated all major components of the refrigeration system and included a checklist review of:

- Human factors
- Facility siting
- Piping systems
- Start-up of existing or modified systems
- Start-up of cooling systems
- Start-up of compressors
- Shutdown of existing or modified systems
- Ammonia charging
- Pumping ammonia out of the system

Worksheet documentation includes: What-If question, scenario description, risk evaluation, and recommendations.

Documentation includes a list of PHA recommendations with dates of scheduled and actual completion. Several items noted as 'complete' were field-checked and confirmed as complete.

Standard Operating Procedures (SOPs) [*40 CFR 68.69*]

The facility maintains an extensive list of written operating procedures, including the following:

- Line and Equipment Opening; 11/14/09
- System Shutdown; 11/16/09
- Start-up following Emergency Shutdown; 11/17/09
- System Monitoring During Operations; 11/14/09
- Emergency Shutdown Procedures and Emergency Operations; 11/17/09
- Operations during a Power Failure; 11/17/09
- Lock-out/Tag-out; 11/14/09
- Confined Space Entry; 11/17/09
- Hot Work Procedure; 11/14/09
- Ammonia Supply Quality; 11/14/09
- Air Leakage; 11/14/09
- Oil Quality; 11/14/09
- Ammonia Unloading Procedure; 11/14/09

Each procedure includes step-by-step operating instructions, description of potential hazards, and PPE requirements.

Written SOPs are also available for individual equipment (major components), including:

- Ammonia pumps
- Compressors
- Evaporators

Since the written procedures were all developed in November 2009, annual certification is not yet applicable. It is noted that the written procedures were dated November 14 or 17, 2009, and this EPA RMP inspection was conducted on November 18, 2009.

The written procedures are complete and comprehensive.

Training [*40 CFR 68.71*]

An Ammonia Awareness training course is offered to all facility personnel on an annual basis. The facility offers twenty-six training courses to facility personnel; these courses are arranged by facility management and include instruction by in-house trainers, the Red Cross, and a fire extinguisher provider. The effectiveness of student learning is evaluated by computer quiz, written test, or visual observation.

The facility has two operators that maintain the ammonia refrigeration system. These operators have been maintaining the ammonia refrigeration since before June 21, 1999. Although these two operators are well-versed in the facility's ammonia process, the facility has not provided a certification that each employee operating process equipment prior to June 21, 1999 has the knowledge, skills, and abilities to safely carry out duties and responsibilities provided in standard operating procedures.

Mechanical Integrity [*40 CFR 68.73*]

Mechanical integrity records include:

- List of pressure relief valves (PRV), including date of installation, date of replacement, and setpoints.
- Log of daily observations / actions in engineer room.
- Daily log of compressor operating parameters.
- Record of equipment oil draining; oil drained every 1 – 2 weeks on up to 10 pieces of equipment.

Sixteen of 27 valves listed on the PRV list have no dates of installation or scheduled date of replacement.

There is no list of all equipment utilized in the ammonia refrigeration system nor established schedule of inspection and tests of such equipment.

Management of Change (MOC) [*40 CFR 68.75*]

The facility has prepared MOC procedures in template format. The facility has not performed any changes that would require the implementation of MOC procedures since discovering the facility is subject to the Risk Management Program regulations.

Pre-Startup Review (PSR) [*40 CFR 68.77*]

A Pre-Startup Review should have been performed prior to introducing anhydrous ammonia into a system that holds 10,000-pounds or greater of anhydrous ammonia. The PSR should have included verification that construction and equipment is in accordance with design specifications, and that safety, operating, maintenance, and emergency procedures are in place and adequate. Although a PHA was performed on January 15-16, 2009, the facility did not review the appropriate operating procedures, as required per PSR procedures, until November 2009.

Compliance Audits [*40 CFR 68.79*]

The facility did not realize that it was subject to Risk Management Program requirements until January 2009, and submitted a Risk Management Plan to the RMP Reporting Center in February 2009. Consequently, the facility is not required to perform a Compliance Audit until January/February 2012.

Five-Year Accident History [*40 CFR 68.*42] / Incident Investigation [*40 CFR 68.81*]

The facility had a fire on June 11, 2007 that damaged major portions of the roof on refrigerated storage areas. Incident Investigation and Five-Year Accident History procedures were not implemented during this near-miss event since the facility did not believe it was subject to the Risk Management Program at that time.

Employee Participation [*40 CFR 68.83*]

The facility has a written plan of action regarding Employee Participation requirements. Facility personnel indicated that all employees have access to PHAs and other safety-related materials, and extensive safety training is provided in order to encourage the participation of employees in safety issues.

Hot Work Permit [*40 CFR 68.85*]

Facility personnel indicated that hot work has not been performed at or near the ammonia process since the installation of the new IQF unit in January 2009.

The facility's hot work permit template does not specify the object to be worked on by identification number or specific location. Although the hot work permit contains fields for the department and floor, and a check box for either piping or equipment, the hot work permit template does not allow for the unique identification of equipment to be worked on.

Contractor Safety [*40 CFR 68.87*]

The facility has not had contractors working at or near the regulated process since the installation of a new IQF in January 2009.

The facility's procedures require a safety briefing to all contractors entering the facility prior to performing work. All contractors who have received the safety briefing must sign that they have received and understood the training.

Emergency Response [*40 CFR 68.90 – 68.95*]

The facility does not consider itself as a first responder facility, although facility personnel had previously trained as first responders. The facility relies on the aid of local responders should an accidental release occur.

Facility personnel are trained in both EPA (Risk Management Program) and OSHA (Process Safety Management) emergency response procedures. In the case of an accident release and emergency evacuation, facility personnel are trained to alert others at the facility, account for facility personnel, inform local responders, and quantify releases, if possible, as minor, intermediate, major, and catastrophic.

FACILITY TOUR

Several items noted during the facility tour include:

- Some ammonia refrigeration equipment, such as lines to/from the old ICF recirculator and the PRV on chiller #2 showed signs of significant exterior corrosion. **The facility should evaluate ammonia liquid supply and vapor return lines, as well as other equipment showing signs of exterior corrosion to evaluate structural integrity.**

- The PRVs on chiller #2 vent internal to the work area. International Institute of Ammonia Refrigeration (IIAR) standard (ANSI/IIAR 2-1992, *Equipment, Design, and Installation of Ammonia Mechanical Refrigeration Systems*) specifies that relief vent lines be vented to a safe location at least 15-ft. above ground level. **The facility should consider re-routing all internally vented PRVs, including those on chiller #2, to a safe location (i.e., outside) and at an elevated area (at least 15-ft. above ground level), away from areas of potential personnel exposure.**

- An out-of-service IQF recirculator tank was still connected to an ammonia liquid supply line. It was noted that there are valves in the line which are closed to prevent ammonia flow to this out-of-service vessel. **In accordance with good operating practices, the facility should consider installing a blank flange or physically disconnecting out-of-service equipment, including the ICF recirculator tank, from ammonia liquid supply to eliminate the potential for ammonia to flow to out-of-service equipment.**

- Pressure relief valves (PRVs) on the high pressure receivers (HPRs) located outside vent at a height approximately 5.5-ft from ground level. IIAR standard (ANSI/IIAR 2-1992, *Equipment, Design, and Installation of Ammonia Mechanical Refrigeration Systems*) specifies that relief vent lines be vented to a safe location at least 15-ft.

above ground level. **The facility should consider re-routing the HPR PRVs to an elevated area (at least 15-ft. above ground level), away from areas of potential personnel exposure.**

- The oil drain on the new IQF recirculation vessel is equipped with a dead-man (i.e., spring-loaded valve) to minimize operator error during oil draining. The oil drain on the old IQF is not equipped with a spring-loaded valve for safe operation. **The facility should consider installing spring-loaded valves on all oil drains, in accordance with good engineering practices.**

- The engine room was not equipped with a continuously operated ventilation fan with fan failure alarm or emergency ventilation fan activated by an ammonia detector. **The facility should evaluate compliance with American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc. (ASHRAE) Standard 15 and add engine room ammonia detectors with emergency ventilation, or continuously operated ventilation with fan failure alarms, as necessary.**

FINDINGS

Management System [*40 CFR 68.15*]

- The facility's management system does not accurately reflect the roles of individuals listed in the management system. The management system contained a template of delegated job titles with responsibility in implementing the Risk Management Program; however, these job titles were not specific to job titles of appropriate facility personnel. **The facility must accurately identify individuals or positions with responsibility in implementing components of the Risk Management Program, as required in 40 CFR 68.15.**

Hazard Assessment [*40 CFR 68.22 – 68.39*]

- The Risk Management Plan does not identify whether environmental receptors exist within the distance-to-endpoint. **The facility must identify environmental receptors within the area of each distance-to-endpoint circle, as required in 40 CFR 68.33(a).**

Process Safety Information (PSI) [*40 CFR 68.65*]

- The piping and instrument diagrams (P&IDs) of the process are very basic showing only major pieces of equipment. The P&IDs do not show all of the equipment utilized in the process such as valves and instrumentation. **The facility must develop P&IDs of the ammonia refrigeration process showing sufficient detail and equipment, as required by 40 CFR 68.65(d)(1)(ii).**

- There was no PSI available for review regarding electrical area classification. **The facility must develop electrical area classification information, as required by 40 CFR 68.65(d)(1)(iii).**

Training [*40 CFR 68.71*]

- An appropriate certification for each current ammonia process operator who was already working on the ammonia process on June 21, 1999 was not available on the day of inspection. **The facility must certify, in writing, that employees already operating a process on June 21, 1999 have the required knowledge, skills, and abilities to safety carry out duties and responsibilities provided in standard operating procedures, as required by 40 CFR 68.71(a)(2).**

Mechanical Integrity [*40 CFR 68.73*]

- Sixteen of 27 valves listed on the PRV list have no dates of installation or scheduled date of replacement. **The facility must ensure that required inspections and tests are being performed on all pressure relief valves (PRVs) in the ammonia refrigeration system, as required by 40 CFR 68.73(d)(1)(2)(3)(4).**

- There is no list of all equipment utilized in the ammonia refrigeration system nor established schedule of inspection and tests of such equipment. **The facility must ensure that procedures are in place to ensure the on-going integrity of equipment and instruments in the refrigeration system, as required by 40 CFR 68.73(b). The facility must ensure that required inspections and tests are being performed on equipment and instrumentation in the ammonia refrigeration system, as required by 40 CFR 68.73(d)(1)(2)(3)(4).**

Pre-Startup Review (PSR) [*40 CFR 68.77*]

- A Pre-Startup Review was not performed prior to a total storage of 10,000-pounds or greater of anhydrous ammonia in the ammonia refrigeration system. A PHA was performed around the date of discovery that the 10,000 Risk Management Program threshold for anhydrous ammonia had been exceeded. **The facility should have performed a Pre-Startup Review, as required in 40 CFR 68.77(a), in which confirmation that the following have been considered in addition to the PHA:**
  - **Construction and equipment in accordance with design specifications [68.77(b)(1)]**
  - **Safety, operating, maintenance, and emergency procedures in place and adequate [68.77(b)(2)]**
  - **Training of each employee involved in operating a process had been completed [68.77(b)(4)]**

Hot Work Permit [*40 CFR 68.85*]

- The facility's hot work permit template does not specify the object to be worked on by identification number or specific location to determine exactly which pipe or equipment hot work is performed on. **The facility's hot work permit must identify the object on which hot work is to be performed, as required by 40 CFR 68.85(b).**